Preface

The European Society for Artificial Intelligence in Medicine (AIME) was established in 1986 following a very successful workshop held in Pavia, Italy, the year before. The principal aims of AIME are to foster fundamental and applied research in the application of artificial intelligence (AI) techniques to medical care and medical re-search, and to provide a forum at biennial conferences for discussing any progress made. For this reason the main activity of the society was the organization of a series of biennial conferences, held in Marseilles, France (1987), London, UK (1989), Maastricht, the Netherlands (1991), Munich, Germany (1993), Pavia, Italy (1995), Grenoble, France (1997), Aalborg, Denmark (1999), Cascais, Portugal (2001), Prota-ras, Cyprus (2003), Aberdeen, UK (2005), Amsterdam, the Netherlands (2007), and Verona, Italy (2009). This volume contains the proceedings of AIME 2011, the 13th Conference on Artificial Intelligence in Medicine, held in Bled, Slovenia, July 2-6, 2011.

The AIME 2011 goals were to present and consolidate the international state of the art of AI in biomedical research from the perspectives of theory, methodology, and application. The conference included two invited lectures, full and short papers, a special session on Applications of AI methods, tutorials, workshops, and a doctoral consortium. In the conference announcement, authors were solicited to submit origi-nal contributions regarding the development of theory, techniques, and applications of AI in biomedicine, including the exploitation of AI approaches to molecular medicine and biomedical informatics and to healthcare organizational aspects. Authors of papers addressing theory were requested to describe the properties of novel AI methodologies potentially useful for solving biomedical problems. Authors of papers addressing techniques and methodologies were asked to describe the development or the extension of AI methods and their implementation, and to discuss the assumptions and limitations of the proposed methods and their novelty with respect to the state of the art. Authors of papers addressing systems were asked to describe the requirements, design, and implementation of new AI-inspired tools and systems, and discuss their applicability in the medical field. Finally, authors of application papers were asked to present the implementation of AI systems to solve significant medical problems, to provide sufficient information to allow the evaluation of the practical benefits of such systems, and to discuss the lessons learned.

AIME 2011 received 113 abstract submissions, 92 thereof were actually submitted as complete papers. Submissions came from 29 different countries, including 8 outside Europe. These numbers confirm the high relevance of AIME in attracting the interest of research groups around the globe. 15 of the papers (10 long and 5 short) were submitted to the special session on AI Applications. The papers for the special session went through a separate review process conducted by AIME Board Members Ameen Abu-Hanna and Steen Andreassen, who selected 6 long papers for inclusion in the special session and also provided recommendations for some papers that were submitted to the special session but were more appropriate for the main session. All other papers, as well as the two most promising papers from the special session that were not selected for inclusion in

it, were carefully peer-reviewed by experts from the Program Committee with the support of additional reviewers. Each submission was reviewed by 2-4 reviewers, with most submissions reviewed by 3 reviewers. The re-viewers judged the quality and originality of the submitted papers, together with their relevance to the AIME conference. Seven criteria were taken into consideration in judging submissions: the reviewers overall recommendation, the appropriateness, the technical correctness, the quality of presentation, the originality, the reviewers de-tailed comments, and the reviewers confidence in the subject area.

In four 2-3 hour Skype-based virtual meetings held during March 25-31, 2011 and in several short discussions in subsequent days, a small committee consisting of the AIME 2011 Scientific Chair, Mor Peleg, the AIME 2011 Organizing Committee Chair, Nada Lavra, and the AIME Chairman of the Board, Carlo Combi made the final decisions regarding the AIME 2011 scientific program.

As a result, 18 long papers (with an acceptance rate of about 26

AIME 2011 had the privilege of hosting two invited speakers: Manfred Reichert, from the University of Ulm, Germany, and Andrey Rzhetsky, from the University of Chicago, Illinois, USA. Manfred Reichert gave a talk on What BPM Technology Can Do for Healthcare Process Support, and Andrey Rzhetsky on Understanding Etiology of Complex Neurodevelopmental Disorders: Two Approaches. Continuing a tradition started at AIME 2005, a doctoral consortium, organized by Carlo Combi, was held again this year and included a tutorial given by Carlo Combi and Riccardo Bellazzi on how to structure different types of research papers. A scientific panel chaired by Carlo Combi and consisting of Ameen Abu-Hanna, Steen Andreassen, Riccardo Bellazzi, Michel Dojat, Werner Horn, Elpida Keravnou, Peter Lucas, Silvia Miksch, Niels Peek, Silvana Quaglini, Yuval Shahar, and Blaz Zupan discussed the contents of the students doctoral theses.

Two half-day tutorials were also held one day before the start of the conference: "Introduction to Clinical Data Mining Methods" given by John H. Holmes and "Per-sonalized Healthcare Information Access" given by Shlomo Berkovsky and Jill Freyne.

Continuing the tradition started at AIME 2009, a significant number of full-day workshops were organized following the AIME 2011 main conference: the workshop entitled Probabilistic Problem Solving in Biomedicine, chaired by Arjen Hommer-som and Peter Lucas; the workshop entitled KR4HC 2011, Third Knowledge Repre-sentation for Health-Care: Data, Processes and Guidelines, chaired by Silvia Miksch, David Riao and Annette ten Teije; the workshop entitled IDAMAP (Intelligent Da-ta Analysis in Biomedicine and Pharmacology) (special topic: Intelligent Data Anal-ysis for Quality and Safety in Healthcare) chaired by Niels Peek, John Holmes, Allan Tucker, and Riccardo Bellazzi; the "Louhi workshop - Text and Data Mining of Health Documents", chaired by ystein Nytr; and "Learning from Medical Data Streams" chaired by Pedro Pereira Rodrigues, Mykola Pechenizkiy, Joo Gama, and Mohamed Medhat Gaber.

We would like to thank everyone who contributed to AIME 2011. First of all we thank the authors of the papers submitted and the members of the Pro-

gram Committee together with the additional reviewers. Thanks are also due to the invited speakers as well as to the organizers of the workshops and the tutorials and doctoral consortium. The free EasyChair conference Web system (http://www.easychair.org/) was an important tool supporting us in the management of submissions, reviews, selection of accepted papers, and preparation of the overall material for the final proceedings. Our thanks goes also to the Slovene National Research Agency (ARRS) and the Office of Naval Research Global (ONRG) for sponsoring the conference. We are also grateful to the collaborators of the Department of Knowledge Technologies of Joef Stefan Institute, Ljubljana, Slovenia, acting in the local organization team, for their help in organizing the conference. The local team was co-chaired by Tina Ani who did a tremendous amount of work which resulted in smooth running of the conference as a whole. Finally, we thank the Springer team for helping us in the final preparation of this LNCS book.

April 2011

Mor Peleg
Nada Lavrač
Carlo Combi